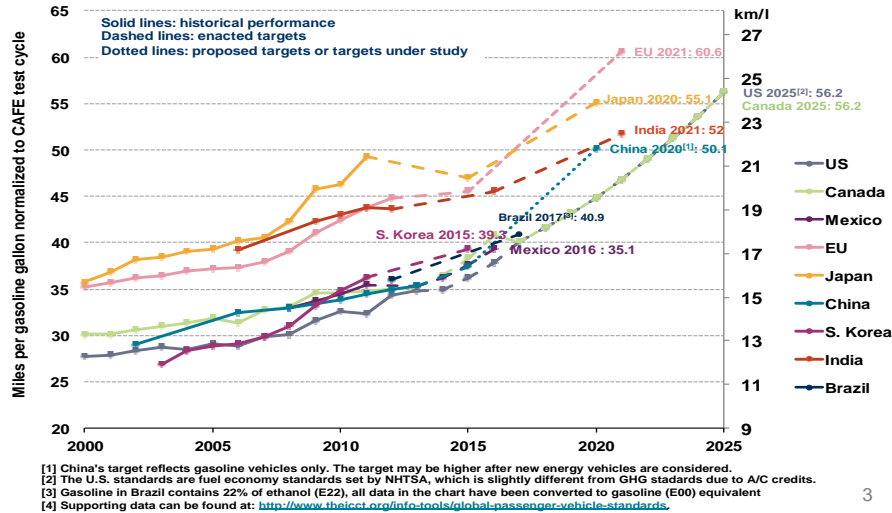




Key Messages

1. Passenger vehicle fuel economy standards will increase in geographic scope, annual rate of improvement, and phase-in periods.
2. Investment, development and integration of energy efficiency technologies will continue to accelerate over the next decade.
3. Regulatory focus will expand to cover greater incentives for electric drive vehicles (batter electrics, plug ins, fuel cells) across multiple venues (local, state, national, utility).
4. Greater focus on fuel economy must be achieved while continuing to lower conventional pollutant emissions despite technical tradeoffs (NOx v. GHG).

Passenger Car Fuel Economy and Greenhouse Gas Standards



2015 Ford F150

World's first high-volume vehicle with aluminum body

Ford has leapfrogged not just other trucks, but cars as well



Body: 97% Aluminum

Frame: 77% High Strength Steel

Weight reduction: ~ 660 lbs (12-13%)

Available engines (in order of power):

2014: 3.7L, 5.0L, 3.5L-turbo, 6.2L

2015: 3.5L, 2.7L-turbo, 5.0L, 3.5L-turbo

Recent advances in computer-assisted engineering were one key factor that enabled Ford to take one of the biggest gambles in its history.

Vanguard of a truly radical transformation in how vehicles are designed and built

Peter Reyes recalls that 15 years ago, it took nine months for Ford Motor Co to make two possible designs for a vehicle frame. Now, the chief engineer of the revamped F-150 pickup truck says he can create 100 different examples in that time.

Ford used CAE tools to digitally experiment with more lightweight materials and test those components against "a blizzard of stiffness and strength requirements," Reyes said.



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